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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,332	01/14/2002	Ee Hong Kwek	04939P020	7052

5073 7590 04/23/2003

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EXAMINER

KINKEAD, ARNOLD M

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/047,332

Applicant(s)

KWEK ET AL.

Examiner

Arnold M Kinhead

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 12-19 is/are rejected.
- 7) ☒ Claim(s) 9-11 and 20-22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

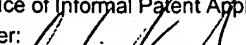
## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: 

Art Unit: 2817

## DETAILED ACTION

### *Specification*

1. The abstract of the disclosure is objected to because it should be only one paragraph. Correction is required. See MPEP § 608.01(b).

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2817

3. Claims 1-8 and 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welland (US 6,483,390) in view of Scoggins(6,469,587).

The reference by Welland discloses a system(see figure 5) comprising a phase comparator circuit(206), charge pump(208), loop filter(210), VCO(400) and divider(214). The VCO, see figure 10, includes a continuously variable capacitance(406p, see figure 17C), and discretely variable cap(402p, see figure 7) coarse tuning is achieved by way of selecting(via Bc, digital line)capacitance values which allows a particular frequency band selection. Fine tuning is achieved by way of the continuous controlled cap and series capacitances (406p) coupled to Vc and analog control line. Figure 10 is described in col. 20, lines 10-32. As noted in col. 24 – (col. 25, lines 28-35), and col. 29, lines 20-53, a more linear response is achieved for the particular frequency band due to the capacitance circuits(ANALOG) as shown in figure 17C with series connected capacitors(Clo....Clo ), note Fig. 17C does not show the equivalent varactor, fine tune, implementation. Inherently, the capacitance circuits will improve operation of the PLL with linear VCO when direct modulation is required of such a system.

The reference does not highlight several conventional practices such as a particular frequency band with specified channel spacing, nor a particular number of bands; also not described is a MIM type series connected capacitance. NO dampening resistor is shown in the general differential oscillator circuit(see figure 10). Finally, no fractional divider is disclosed.

With regards the fractional N divider the reference shows a general N divider block(214), however, fractional division is a notoriously well known PLL feedback division mechanism to enhance the output frequency control. With regards the number of bands and channel spacing, these are conventional design

Art Unit: 2817

considerations well within the level of skill for one of ordinary skill in the art and provide the desired operational characteristics for the particular system; for example, mobile telecommunication systems which may have many users that require sufficient channel (spacing) bandwidth to avoid interference. With regards the type of capacitors, the use of MIM for integration and dc isolation purposes is notoriously well known in the art.

Lastly, the reference by Scoggins discloses a particular differential VCO with varactor fine tuning(V1,V2), see figure 5, with dampening resistors(R15,R17), this serves to highlight conventional implementation of the series cap(C11), and varactor arrangement with dampening means.

In light of the above it would have been obvious to one of ordinary skill in the art to have recognized that the general differential type VCO and PLL could be modified to make use of several conventional PLL ideas such as the fractional divider for enhancing the vco output control to select a particular frequency, as well as specify the number and spacing of the frequency bands of operation to allow for a flexible and dynamic communication system. The implementation of MIM type capacitors allowing for integration and dc isolation purposes as is notoriously well known in the art. The reference by Scoggins showing the fine tune varactor implementation that provides an equivalent analog fine tuning as well as the dampening resistors for enhancing the input control voltage as is conventional.

*Allowable Subject Matter*

4. Claims 9-11, and 20-22 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2817

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnold M Kinkead whose telephone number is 703-305-3486. The examiner can normally be reached on Mon-Fri, 8:30 am -5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on 703-308-4909. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7724 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Arnold M Kinkead  
Primary Examiner  
Art Unit 2817

Arnold Kinkead  
April 21, 2003